Compliance Assistance Tool for Clean Air Act Regulations: Subpart GGG of40 CFR NESHAPS for Source Category Pharmaceutical Production

August 2002

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Chapter 11
Emissions Averaging

11.1 Overview

The rule allows for limited emissions averaging of HAP emission sources (process vents and storage tanks). The requirements contain restrictions similar to those imposed for other Part 63 standards. For example, credits are discounted by 10 percent, and restrictions on averaging sources already controlled by State rules or prior to 1990 are in effect.

11.2 Structure of the Regulation

- Requirements are located in §61.1252(d)
- Compliance Demonstration §63.1257(g) and (h)
- Monitoring §63.1258
- Recordkeeping §63.1259(e)
- Reporting §63.1260(h)

11.3 Applicability

Emissions averaging can be done only for some processes and tanks. The following process vents and tanks can be included in averaging groups:

$ Two or more processes subject to 93 percent control requirement in §63.1254(a)(1)(i).

$ Two or more storage tanks subject to 90 or 95 percent control requirement in §63.1253(b)(1) or §63.1253(c)(1)(i).

Chapter 11 at a Glance

- Process vents that meet the individual vent criteria for 98% control but have grandfathered control devices due to the level of control achieved before April 12, 1997.

Exclusions

$ States have the option not to allow emissions averaging

$ Control of emissions before November 15, 1990 or control due to State regulations cannot be used as emission credits in averaging, except where control is increased after November 15, 1990 and above what is required by the State

$ Rule excludes emission points that:

1. Are permanently shutdown or out of HAP service
2. Are controlled using equipment,

such as
-- Floating roofs,
-- Grandfathered storage tanks as described in §63.1253(c)(1)(ii),
-- Boilers, incinerators, or flares as described in §63.1254(a)(1)(ii)

3. Are controlled to the 20 ppmv concentration standard or alternative standard

- **$** Processes complying with 2,000 lb/yr emission limit as described in §63.1254(a)(2) cannot be used in emissions averaging

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- **$** Averaging groups for processes are limited to 20 processes, and averaging groups for tanks are limited to 20 tanks at an affected source at any one time.

11.4 Standards

The control requirements (R) for emissions averaging are as follows.

Processes

- **$** The overall percent reduction efficiency, R, for all processes included in an average must equal 93 percent or greater.

Tanks

- **$** The overall percent reduction efficiency, R, for all tanks requiring 90 percent control in an average must equal 90 percent or greater

- **$** The overall percent reduction efficiency, R, for all tanks requiring 95 percent control in an average must equal 95 percent or greater.

Note: If the operator is complying with the planned routine maintenance provisions for centralized combustion control devices in 1252(h), the process vents cannot be used in emissions averaging during the periods of planned routine maintenance.

11.5 Compliance Demonstration

R is calculated in the following equation:
E_{unc} = total yearly uncontrolled emissions from

$$R = \frac{E_{unc} - (D)(E_{cont})}{E_{unc}}(100\%)$$

sources in processes or from tanks

E_{cont} = total yearly emissions after control from sources in processes or tanks

D = 1.1, the discounting factor

Averaging example for processes

An example for averaging of processes is presented in Table 11-1. In example 1, three processes are included in an emissions average. From the table, there are several emission points within each process that are controlled. For example, process A has three vents, two controlled by condensers and one directed to a boiler. In processes B and C, vents are controlled using a thermal oxidizer (throx).

In this example, three processes are evaluated to include an emissions average. In an emissions average, no credit is allowed for emission points controlled to comply with a State (or Federal) rule unless the level of control has been increased after November 1990 above the State requirement. In Table 11-1, several vents are controlled by State rules (vent H is controlled to 98% while other vents are controlled to less than 93%). Since the State RACT are all less than 93% and vent H complies with the State Air Toxic rule, there are no credits from processes A and C. Since there are no credits from process C and it is already controlled to > 93%, there is no reason to include process C in the emissions average.

R is calculated in the following equation:

$$R = 96\% = \frac{57{,}900 - 1.1(2{,}055)}{57{,}900}(100\%)$$

The emissions average complies with the requirements of §63.1252(d)(8) because the annual percent reduction efficiency is greater than or equal to 93 percent.

Averaging example for Tanks

An example for averaging of tanks is presented in Table 11-2. In this example, 5 tanks out of 14 are included in the emissions average and the average entirely excludes tanks that are already controlled to the level required by State and/or Federal rules and/or using devices installed prior to November 1990.

The average complies with the requirements of §63.1252(d)(7) because the annual percent reduction efficiency is greater than or equal to 90 percent.

11.6 Recordkeeping

The emissions averaging provisions also require a rolling quarterly calculation of the annual percent reduction efficiency.

The results of the quarterly calculation are required to be reported in either every other semiannual report, or every 4th quarterly report, if a quarterly report is required.

NOTE: Quarterly reports are not required by the averaging provisions, but they may be for other reasons, as described in §63.1260(g)(1).

11.7 Reporting

Implementation Plan

An implementation plan must be submitted 6 months prior to the compliance date. The plan is described in §63.1259(e) and must include:

- **$** the identification of all process vents and tanks in the average,
- **$** the uncontrolled and controlled emissions of HAP and the overall reduction efficiency,
- **$** supporting calculations used to obtain uncontrolled and controlled HAP emissions and overall percent reduction efficiency,
- **$** estimated values for monitoring parameters, and
- **$** a certification statement.

Additionally, the implementation plan should contain a Hazard or Risk Equivalency Determination that should be made to the satisfaction of the operating permit authority. The plan should address the points excluded from control via the emissions averaging provisions.

Periodic reports

Periodic reports must be submitted on a semiannual basis; they can be part of the periodic reports submitted for the standard. The periodic report must include the calculations of overall percent reduction efficiency for the reporting period. Every second semiannual report must demonstrate that the overall percent reduction efficiency for the year has been met. Other items to be submitted in the periodic report include any changes to the emission sources included in the average, or any changes in the methodology used to calculate uncontrolled or controlled emissions.

11.8 Hazard or Risk Equivalency Determination

Definitions

Hazard assessments address toxicity but not exposure. Hazard refers to the intrinsic toxic properties of a pollutant, such as potency or the types of toxic endpoints of concern (e.g., cancer, development effects).

Risk is an integration of hazard and human exposure to the pollutant used to estimate the type and likelihood of toxic effects associated with a specific pollutant release.

NOTE: Under this the implementing agency can consider either of these factors in determining whether an averaging plan should be approved.

Applicability

Hazard or risk equivalency determinations need only be conducted when inter-pollutant trading occurs (i.e., the overcontrol of one or more HAP is used to offset required reductions of one or more different HAP).

Risk Determination

The implementing agency should specify the level of detail and desired output of the risk analysis to be conducted. Most State agencies have established procedures for health-based screening for air toxics; these procedures could also be used for this analysis.

Table 11.1. EMISSIONS AVERAGING EXAMPLE - PROCESSES

Process vents	Process A			Total for Process A	Process B				Total for Process B	Process C				Total for Process C
	A	B	C		D	E	F	G		H	I	J	K	
Annual emissions (lb/yr) (before control)	1,000	500	1,000	2,500	25,000	100	100	30,000	55,200	40,000	100	50	50	40,200
Control requirements														
PhRM MACT (93% average)	93	93	93		93	93	93	93		93	93	93	93	
State/RACT	60	50	None		90	None	None	None		None	None	None	None	
State AirToxic	None	None	None		None	None	None	None		98	None	None	None	
BACT/other	None	None	None		None	None	None	None		None	None	None	None	
Actual control, percent device	70 Condenser	50 Condenser	NA Boiler		98 Throx	None	None	98 Throx		98 Throx	None	None	None	
Year installed	1991	1985	1992		1992			1992		1992				
Annual emissions, lb/yr (after control)	300	250	NA	550	500	100	100	600	1,300	800	100	50	50	1,000
Current control efficiency, per process, percent				63.3					97.6					97.5
Uncontrolled, lb/yr[1]	1,000	500	1,000	2,500	25,000	100	100	30,000	55,200	800	100	50	50	200
Emissions from **eligible** emissions sources														
Controlled, lb/yr	300	250	0	550	500	100	100	600	1,300	800	100	50	50	200
Emissions from **eligible** emissions sources														
Uncontrolled, lb/yr		57,900												
Controlled, lb/yr		1,850												
Overall percent reduction efficiency		96												

Table 11-2. EMISSIONS AVERAGING EXAMPLE - TANKS

Tank identification	**Storage Tanks**													
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**
Capacity, gallon	20,000	15,000	15,000	20,000	55,100	12,500	8,500	14,000	8,500	11,000	13,000	13,000	15,000	15,000
VP/HAP, psia	0.5	1.5	2.7	3.1	1.8	2.9	2.1	1.6	0.4	6.6	0.8	2.6	0.5	2.6
Annual emissions, lb/yr (before control)	200	500	300	400	700	300	50	100	100	300	200	400	200	300
Control requirements														
PhRM	None	None	90	95	None	90	None	None	None	90	None	90	None	90
MACT	None	None	None	95	95	None	None	None	None	None	None	None	None	None
State/RACT	None	None	None	95	95	None	None	None	None	None	None	None	None	None
State Air Toxic	None	None	None	95	95	None	None	None	None	None	None	None	None	None
BACT/other	None	None	None	95	95	None	None	None	None	None	None	None	None	None
NSPS Kb														
Actual control, percent device	60 Condenser	None	62 Condenser	95 Condenser	95 Condenser	98 Throx	98 Throx	None	None	98 Throx	None	98 Throx	None	98 Throx
Year installed	1992		1992	1992	1992	1994	1994			1994		1994		1994
Annual emissions, lb/yr (after control)	80	500	114	20	35	6	1	100	100	6	200	8	200	6
Eligible for emissions averaging	N	N	Y	N	N	Y	N	N	N	Y	N	Y	N	Y
Uncontrolled, lb/yr			300			300				300		400		300
Controlled, lb/yr			114			6				6		8		6

Uncontrolled emissions from **eligible** tanks subject to 90% control	1,600	Controlled emissions from **eligible** tanks subject to 90% control	140
Uncontrolled emissions from **eligible** tanks subject to 95% control	0	Controlled emissions from **eligible** tanks subject to 95% control	NA
Overall percent reduction efficiency	90.4		